

Customer No.: 31561
Docket No.: 11141-US-PA
Application No.: 10/605,402

REMARKS

Present Status of the Application

Claims 1-10 are objected to because there are typographic errors and insufficient antecedent basis in claims 1 and 8. The Office Action rejected claims 1-4 and 8-10 under 35 U.S.C. 102(b), as being anticipated by Jhabvala (U.S. 4,119,996). The Office Action also rejected claim 7 under 35 U.S.C. 103(a) as being unpatentable over Jhabvala. Claims 5 and 6 are allowable if rewritten to overcome the objections. Claims 11-22 are allowed.

Applicants have amended claims 1 and 8 to overcome the objections.

Applicants have also amended claim 1 and cancelled claims 5-7. Since claims 5-6 are allowable, claim 1 comprising the limitations of claims 5-6 should be allowed. Claim 2-4 depending to claim 1 should also be allowed.

In addition, applicants have further amended claim 8 to more clearly define the invention.

After entry of the foregoing amendments, claims 1-4, 8-22 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of Office Action Objections

Applicants have amended "filing" to "filling" in claim 1 and amended "a insulting layer" to "an insulating layer" in claim 8.

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In addition, claim 8 is objected to because the limitation "bottom" does not have sufficient antecedent basis. Applicants have amended claim 8 as the following to overcome the objection.

8. A shallow trench isolation (STI) structure that defines an active area, comprising:
a substrate having a shallow trench therein, *the shallow trench having a bottom*;
an isolation layer filling up the shallow trench; and
a doped region as a channel stop layer disposed directly under the bottom of the shallow trench, wherein
the doped region does not extend to a sidewall of the shallow trench.

Discussion of Office Action Rejections

Applicants respectfully traverse the 102(b) rejection of claims 8-10 because Jhabvala (U.S. 4,119,996) does not teach every element recited in these claims.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C 102, each and every element of claim in issue must be found, "either expressly or inherently described, in a single prior art reference". "The identical invention must be shown in as complete details as is contained in the claim. Richardson v. Suzuki Motor Co., 868 F. 2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See M.P.E.P. 2131, 8th ed., 2001.

The present invention is related to a shallow trench isolation (STI) structure as claim 8 recites:

8. A shallow trench isolation (STI) structure that defines an active area, comprising:
a substrate having a shallow trench therein, *the shallow trench having a bottom*;
an isolation layer filling up the shallow trench; and
a doped region as a channel stop layer disposed directly under the bottom of the shallow trench, wherein
the doped region does not extend to a sidewall of the shallow trench.

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Jhabvala fails to teach or suggest that the isolation layer fills up the shallow trench. In Jhabvala's reference, as shown in Figs. 9-10, the V notch 31 is formed in diffused layers 15, 32 and 67 formed in the substrate 11. Then, a layer 35 is formed on the surface of the V notch 31. In particular, the layer 35 is conformally formed in the V notch 31 but it does not fill up the V notch 31. Because the V notch 31 is not filled with the isolation layer 35, it may not be an isolation structure having good isolating effect.

However, in claim 8 of the present invention, the isolation layer fills up the shallow trench such that the shallow trench isolation may have good isolating effect. Jhabvala does not teach the isolation layer fills up the shallow trench, and thus Jhabvala does not teach every element recited in claim 8.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 8 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 9-10 patently define over the prior art as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-4, 8-22 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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